A.2.2 Long-Term Astrophysics Program (LTSA)

1. Scope of Program

The Long-Term Space Astrophysics (LTSA) Research Program is intended to enhance research in space astrophysics by providing a stable long term source of support, up to a maximum of five years, and to strengthen the U.S. long term research base in space astrophysics. Abstracts of currently funded LTSA projects can be found at <http://www.hq.nasa.gov/office/oss/codesr/LTSA_Abstracts.html>.

This ROSS-98 NRA solicits proposals for research in astrophysics whose dominant emphasis is the analysis and interpretation of data from past, current, and future space astrophysics missions. In support of that activity, but as a secondary emphasis, the proposed research may include theoretical research, numerical modeling, use of existing data from ground-based or suborbital observations, and laboratory astrophysics measurements. In addition, NASA will consider requests for support for new ground-based observations provided that the requests are clearly described, the observations are important to the success of the proposed effort, and their expense (including salary, travel, etc.) constitutes no more than 10 percent of the proposal's total budget.

The LTSA Research Program is intended to support research in space astrophysics that is substantial and cohesive, and whose duration and scope go beyond those of the typical proposal funded by other NASA space astrophysics programs. Conversely, this LTSA Research Program is not intended to support:

- investigations whose primary emphasis is theoretical research, numerical modeling, the use of existing data from ground-based or suborbital observations, laboratory astrophysics measurements or detector development, since there exist other NASA programs that support research with these kinds of emphases;
- investigations whose primary focus is on solar system objects or on the solar-terrestrial interaction, since other NASA programs support this kind of research;
- proposals primarily for the education and training of students;
- proposals for the organizing and/or hosting of scientific meetings; and
- proposals for substantial computing facilities or resources, beyond nominal workstation or networking fees.

NASA recognizes that a proposal for a five-year research program cannot be as specific as a proposal for a small near-term research task. Nevertheless, the proposer must convincingly describe the research program with enough clarity to give peer reviewers a clear understanding and appreciation of the proposed effort, as well as its need for a long term period of performance.

2. Types of Proposals

For the purpose of this ROSS-98 NRA, NASA recognizes LTSA proposals from two different groups of researchers, "Junior Researchers" and "Senior Researchers."

Junior Researchers are researchers who are early in their careers and still establishing themselves, such as postdoctoral fellows (beyond their first postdoctoral fellowship), and tenure-track faculty. Based on recommendations from peer reviewers of prior cycles of the LTSA program, Junior Researchers are defined as those more than two years after having received their Ph.D. and fewer than eight years after the Ph.D. The rationale for the lower threshold is that many programs exist for first postdoctoral fellowships with a duration of at least two years. The rationale for the upper threshold is that most universities with tenure-track positions decide on awarding, or not awarding, tenure by the seventh year after the candidate's Ph.D. This simple criterion of using boundaries for "time after Ph.D." is also necessary because it treats researchers in academia, industry, Government, and other organizations on an equal basis. Note that where a Junior Researcher is prevented from proposing as Principal Investigator because of institutional restrictions, a Principal Investigator may submit the proposal on behalf of a Co-Investigator who serves as the actual "Science Principal Investigator," provided that the latter's name and individual research program are clearly identified in the abstract and list of investigators (see Section 1.3 of Appendix C)

Senior Researchers are proposers who are more experienced, as well as better established, such as tenured faculty at the university level and senior scientists at universities and research laboratories. This distinction between Junior Researchers and Senior Researchers should be clear for most potential proposers. Any questions regarding eligibility for Junior or Senior categories should be directed via E-mail to <ltsa@hq.nasa.gov>.

Support for Junior Researchers is essential to the long term health of the U.S. research effort in space astrophysics, while the experience of the Senior Researchers is needed to maximize the near-term research results in space astrophysics. Therefore, the intended funds distribution for this NRA will favor proposals from Junior Researchers, provided that their proposals are on a par with those from Senior Researchers. The target is to award two-thirds of the available LTSA program funding for the LTSA to Junior Researchers, contingent upon the submission of an adequate number of highly ranked proposals, and the remaining one-third for Senior Researchers. During the last proposal review cycle, 47% of available funds were awarded to Junior Researchers.

Because of the long duration of long term research projects, it is possible that a substantial portion of the necessary data will be obtained from future space astrophysics observations. However, approval of a LTSA proposal does not constitute approval of the specific observing programs contemplated or described by the proposer. It will be the proposer's responsibility to propose specific observations and to obtain the desired data via the appropriate mission-specific observing programs or archival research programs.

The cost portions of such observing or archival-data proposals should be very low; it may include requests for travel support or other costs, but may not duplicate any salary costs.

3. Proposal Category and Research Area

Each LTSA proposal must be identified as to Junior or Senior category by checking the appropriate box on the Cover Page (see Appendix C.5.3 for instructions for electronically accessing and submitting the Cover Page). For all Types of LTSA proposals, the Cover Page also provides for designation of the Research Area, as defined below, that forms the primary focus of the proposal. The primary use of these Research Areas is to facilitate the assignment of the proposal to an appropriate review panel. Note that each proposal, regardless of Type, must identify one primary Research Area (a secondary Area may be designated if appropriate). NASA reserves the right to reassign a proposal to a different primary or secondary Research Area(s). The eight currently defined Research Areas are:

1. *Solar System* (note: proposals whose primary focus is solar system research using the IRAS Asteroid and Comet Survey or Voyager data should be submitted to other OSS NRA's relevant to those objectives);
2. *Star Formation and Pre-Main Sequence Stars* (star forming clouds, protoplanetary and debris disks, protostars, T Tauri stars);
3. *Main Sequence Stars*;
4. *Post-Main Sequence Stars and Collapsed Objects* (giants, isolated white dwarfs, isolated neutron stars, central stars of planetary nebulae);
5. *Binary Systems* (cataclysmic variables, x-ray binaries, black hole binaries);
6. *Interstellar Medium and Galactic Structure* (supernova remnants, dark clouds, interstellar dust, H II regions, diffuse galactic emission, planetary nebulae);
7. *Galaxies* (normal galaxies, interacting galaxies, starburst galaxies, Seyfert galaxies, quasars, radio galaxies);
8. *Large Scale Cosmic Structures* (clusters of galaxies, galaxy environment and evolution, intracluster medium, diffuse x-ray background, cosmology).

4. Programmatic Information

This program was begun during the FY 1990 award cycle and currently provides support for about 90 research groups and individuals, with a budget level of approximately $8.2M per year. It is anticipated that approximately $2M will be available through this ROSS-98 NRA for the funding of new awards for this program element, to fund proposals of a maximum of five years duration.

The schedules for submission of the Notice of Intent and proposal are given in Table 1 of the cover letter of this NRA. The World Wide Web site for submitting both the NOI and the *Cover Page/Proposal Summary* (see Appendix C.5.3) is <http://props.oss.hq.nasa.gov>;

proposers without access to the Web or who experience difficulty in using this site may contact Ms. Debra Tripp (E-mail: deb.tripp@hq.nasa.gov) for assistance. Hard copies of the proposals are to be delivered to:

ROSS-98 NASA Research Announcement
Long-Term Space Astrophysics Research Program
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Suite 700
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Washington, DC 20024
Phone number for commercial delivery: (202) 554-2775

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